

**CLAIMS**

What is claimed is:

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1. A process for the production of electrical steel sheet cores for use in electrical equipment comprising the following steps
  - a) applying of at least one coating layer of an aqueous composition onto the surface of the electrical steel sheet, the composition comprising
    - A) 100 parts per weight of one or more epoxy resins based on bisphenol-A-type, 100% of solids,
    - B) 1 to 25 parts per weight of dicyandiamide,
    - C) 0.1 to 10 parts per weight of additives,
    - D) 0.1 to 120 parts per weight of flow agent and
    - E) 50 to 200 parts per weight of water,
  - b) drying the applied layer under increased temperature and
  - c) assembling of the coated electrical steel sheets to form a sheet core and bonding the sheets with each other by thermal curing of the coating.
2. The process according to claim 1 wherein the composition is produced by production of an epoxy dispersion by mixing the epoxy resin with water and then adding the dicyandiamide and the further components of the composition.
3. The process according to claim 2 wherein the epoxy resin is used in a quantity of 40 to 70 wt.% in the aqueous dispersion.
4. The process according to claim 1 wherein water is added in a quantity such that a solids content of 30 to 60% is obtained for the finished composition.

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5. The process according to claim 1 wherein the number average molar mass of the epoxy resin is from about 700 to 5000, the epoxy equivalent weight from about 400 to 6000.
- 5 6. The process according to claim 1 wherein micronized dicyandiamide is used with an average particle size of no greater than 6  $\mu\text{m}$ .
7. The process according to claim 1 wherein polyglycol is used as a flow agent in a quantity of 2 to 70 parts per weight.
- 10 8. The process according to claim 1 wherein one or more monomeric organo-metallic compounds selected from the group consisting of ortho-titanic and -zirconic acid esters are additionally used in the composition.
- 15 9. The process according to claim 1 wherein the composition is applied onto the unpretreated and uncoated electrical steel sheet as one-layer-coating with a layer thickness of 3 to 8  $\mu\text{m}$ .
- 20 10. The process according to claim 1 wherein the drying of the coating is effected at temperatures causing a PMT in the range of 230 to 260°C.
11. The process according to claim 1 wherein the bonding and curing of the coating is effected at temperatures from 100 to 300°C and at a pressure of 1.0 to 6.0  $\text{N/mm}^2$  during a fixed time period.
- 25 12. An electrical steel sheets core for use in electrical equipment produced by the process according to claim 1.